

PERSONALIZED NETWORK-BASED SERVICES

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to computer networks, such as the Internet, and, in particular, to receiving and storing customized sets of information from various network-based information services.

Description of the Related Art

10 Computer networks, such as the Internet, enable users to access an almost unlimited amount of information. Web browsers, network search tools, and software agents assist users in locating information available on the Internet.

15 A personal portal is a network search tool that defines a user profile specifying the information to be collected and the other services requested by the user. For example, a particular user may be interested in the current prices of specific stocks that he owns, the latest scores for his favorite sports teams, his daily horoscope, the weather report for his home town, and his favorite music. For such user, personal portal services are being provided by a number of Internet service providers. When a user of a personal portal accesses his/her personal portal, the Internet service provider then automatically accesses the latest information from various sources and presents this information to the user.

20 Traditional web portals allow users to specify customized sets of information in user profiles. They provide little flexibility, however, in selecting the format for such information.

The customized information is usually presented to the users only as a computer display in a predefined composite format.

SUMMARY OF THE INVENTION

5 The present invention is directed to a network-based service where different sets of customized information are delivered to a user at different times to different destinations (i.e., different user devices) selected by the user. For example, a user may desire to have a customized set of information such as stock quotes and horoscopes delivered in an audio format to his Internet radio (i.e., a radio configured to receive audio information from the Internet). A user
10 may also desire to have another or the same set of customized information delivered in a video format to his Internet television (i.e., a television set configured to receive video information from the Internet).

 In accordance with the principles of the present invention, a user accesses a network-based server, generally owned by a network service provider, and defines a user profile which
15 specifies the information or other contents to be made available. The user may request that the information be delivered later automatically or be made available on demand. The user has flexibility in requesting a particular destination and format to receive the information on demand. In case of the later delivery, the user requests specified times in a form of a schedule and specified destinations (i.e., user devices) for the delivery of the information. The user also has
20 flexibility in selecting the format for the delivery of information. Sometimes, the format is dictated by the selection of user device, e.g., the selection of an Internet radio implies audio format, and selection of an Internet television implies video format. However, some user devices

are capable of receiving information in more than one format, e.g., a computer may have the capability to receive information in audio, video, or text format. Depending on the implementation, one or more customized sets of information are delivered to one or more user devices as a function of the specified format or the specified time or both.

5 In one embodiment, the present invention is a network-based server configured to provide access to a user via an input port through which one or more customized sets of information are requested. The network-based server also comprises a processor that collects the requested sets of information from a single or a plurality of sources. Then, at specified times, these customized sets of information are delivered via an output port to one or more user devices in formats
10 selected by the user. In this embodiment, a personal computer, an Internet radio, an Internet television, and other compatible appliances are possible user devices. The customized information may be gathered for the user in real time or may be pre-fetched and queued to be delivered at the specified time or may be a combination of both where some of the information is pre-fetched and some of the information is gathered in real time. Depending on the
15 implementation, the customized information and the format may be modified according to some pre-specified changes or may be modified according to manual changes requested by the user.

In another embodiment, the present invention is a method for presenting information to a user accessing a network-based service provider, comprising two phases. The first phase comprises the steps of creating a user profile that defines a schedule of one or more information
20 requests, each information request having a specified destination (i.e., a user device). The second phase comprises the steps of (a) providing for the user profile; (b) preparing one or more information sets corresponding to the user profile; and (c) automatically delivering the requested

information to the corresponding destination at a time based on the schedule. The method may include the optional step of converting one or more information sets to the formats desired by the user. In this embodiment, the method may also include the steps of automatically modifying the user profile according to some pre-specified changes and then using the modified user profile to
5 gather the information for presentation to the user. These changes may also be manually requested by the user.

BRIEF DESCRIPTION OF THE DRAWINGS

Other aspects, features, and advantages of the present invention will become more fully apparent from the following detailed description, the appended claims, and the accompanying
10 drawings in which:

FIG. 1 is a block diagram illustrating various components in accordance with one embodiment of the present invention;

FIG. 2 shows a block diagram of the network connections for service provider of FIG. 1 according to one embodiment of the present invention; and

15 FIG. 3 shows a flow diagram representing exemplary processing implemented at a user end and at a service provider end.

DETAILED DESCRIPTION

The present invention is directed to a network-based service wherein one or more
20 customized sets of information requested by a user are delivered to the user at specified times in specified formats.

A user profile in accordance with the present invention is a network-based data file that specifies the services that are to be made available or automatically delivered to the user in specified formats at specified times. For example, a user may create a user profile which requests that on weekdays, local weather reports and traffic reports should be delivered to his Internet radio every morning at 6:00 AM; and on weekends, only the weather report should be delivered to his Internet television at 10:00 AM. The user profile may include more than one set of information requests. In our example, the user profile may also include a request for stock market information, videos, audio tracks and other current news to be delivered at 2:00 PM everyday to his office computer.

According to the principles of the present invention, first, a user creates a user profile which includes requests for one or more customized sets of information. The user profile also specifies a preferred format and preferred time for delivery of each set of information. The information requests may include, for example, news (e.g., international, financial, technology, local, sports), weather reports, traffic reports, daily calendar, reminders (e.g., birthdays, anniversaries), and music (e.g., easy listening, classical, country). As the scope of network-based services expands, the information content may be expanded to include video-on-demand services (e.g., television programs, movies).

A network-based server usually owned and operated by a network-based service provider stores the user profile created and input by the user, and then at scheduled times, prepares and automatically delivers the requested sets of information to the specified user devices. The network-based server is configured to automatically deliver the requested information at the scheduled times, however, the user has flexibility in manually selecting the delivery time to be

other than the scheduled time, e.g., user may randomly log on one morning and request his favorite music. The network-based server is capable of delivering such information on demand.

Analogously, the user has flexibility in making other changes to the user profile, e.g., the user may randomly log on and request changes to the fact that on Tuesday, the information should be sent to his computer rather than to his Internet radio. Alternatively, the user may select a format other than the pre-specified format, e.g., on Wednesday, the information should be sent to his hotel room on his lap-top computer in a text format.

During the preparation of each information set, the requested information is collected from one or more sources, e.g., various informational databases connected to the network. The information contents may also be fetched from existing radio stations, television stations, video servers, wirelines, recordings, cable TV, etc.

After collecting one or more customized information sets, if necessary, the network-based server converts the format of the information sets to the formats desired by the user, e.g., text information may be converted to an audio format via suitable text-to-audio converters. The conversion step is optional as, generally, the information is collected from one or more databases in the desired format and no conversion is required.

Then, at the specified times, if necessary, a connection is established between the service provider and the specified user devices. One or more information sets are then delivered from the service provider to the user devices.

The principles of the present invention provide users and/or service providers flexibility to improve upon the existing services. To improve the quality of audio, the downloaded data may

be coded by using well-known compression techniques. Cache servers may also be placed in the network to create play-out buffers and to cache frequently accessed contents.

The user may also have the option of doing remote administration via a telephone interface. For example, if the user is away from home, the user may call a telephone number to direct the user's information to a different user device. The user may also call a telephone number to request that all or a part of the audio portion of an information set be played over the telephone line.

The principles of the invention may be further used to enhance the existing services provided by the service provider, e.g., the user may request specific for-a-fee content such as training classes, movies, etc.

FIG. 1 is a block diagram of one embodiment **100** of the present invention. In this embodiment, the principles of the present invention are illustrated in the context of Internet-based services.

A user of a network-based service in accordance with the principles of the present invention is connected to an input port **109** of a service provider **103** via a user computer **105**, e.g., a personal computer or similar device used for accessing the Internet. Service provider **103** may be any vendor providing network-based personalized services. In general, such service provider will be an Internet service provider **103**, hereafter ISP **103**. Interconnection **107** between ISP **103** and user computer **105** may be a land-line connection or a wireless connection.

The user also has at least one user device **110**, e.g., an Internet-ready appliance or computer, which is connected to an output port **111** of ISP **103** via interconnection **120**. Each

interconnection 120 may be a land-line link or a wireless link. For faster speed, interconnection 120 may be an XDSL link. In case of video transmission, interconnection 120 may be a cable link. Interconnection 120 is herein described in broad context including any converter box and any other equipment required to receive a transmission from ISP 103.

5 ISP 103 is further connected to world-wide web 115, or other sources on the Internet. This connectivity between ISP 103 and web 115 permits ISP 103 to collect the information from various other web sites 117 and databases 119 connected to web 115.

Initially, the user connects to ISP 103 via user computer 105 and creates a user profile comprising one or more sets of information requests. For each set of information requests, the user also specifies a preferred format and a preferred time for the delivery of information to a
10 corresponding user device 110. The user has flexibility in choosing how to create this user profile. In one implementation, the user is presented with a series of graphical user interfaces (GUIs) on user computer 105 asking the user to enter or select preferences corresponding to different types of information.

15 ISP 103 receives the user profile and begins to prepare customized information requested in the user profile. During the preparation of the customized information, ISP 103 may utilize a plurality of databases 119 connected to world-wide web 115. Databases 119 include text, audio, and video databases. In an exemplary case, the following databases may be used:

- o A news database that provides a summary of current news;
- 20 o A training and reference database that provides various local training and/or reference services;

- o A communications database that provides web-based radio and/or television programming;
- o A video-on-demand database that provides videos on demand;
- o A music database that provides different music; and
- 5 o A communicator database that provides alerts of special events or items requiring attention.

After the customized information has been prepared for the user, if necessary it is changed to the format specified in the user profile. The conversion step is optional, as generally, the information is gathered from the corresponding databases in the desired format. After the information has been changed to the desired format, it is delivered to the specified user device 10 **110** in the specified format at the specified time. As described before, the information may be gathered in real time, or pre-fetched and queued, or a combination of both where some of the information is gathered in real time and some of the information is pre-fetched.

FIG. 2 shows a block diagram of the network connections for service provider **103** of FIG. 1 according to one embodiment of the present invention. As shown in FIG. 2, the user accesses ISP **103** via computer device **105** which is connected to input port **109** of ISP **103** via interconnection **107**. In FIG. 2, ISP **103** is shown to have input port **109**, output port **111**, and a processor **203**. Processor **203** comprises an access and control server **206**, a web portal server **208**, a database server **210**, an applications server **212**, a news server **214**, an audio library server **216**, a video library server **218**, a format-converting server **220**, and a download server **222**.

Access and control server **206** implements a user registration system to manage and control the user's access to the network.

The user generates a user profile by using the web portal server **208**. The user profile specifies the list of information requests, and preferred formats and times for delivery of the information satisfying these requests. The user profile is stored either on access and control server **206** or on web portal server **208**. Web portal server **208** executes the information requests and gathers the information, as appropriate, from a plurality of available servers including database server **210**, application server **212**, news server **214**, audio library server **216**, and video library server **218**. Database server **210** accesses available informational databases on the web organized by time, location, organization, category, and author. Application server **212** provides integrated management applications, interfaces to legacy systems, and business applications. News server **214** provides a database of news-related information organized by time, location, company, categories, and industry. Audio library server **216** provides pre-recorded audio information, e.g., music, talk-radio, etc. Video library server **218** provides video information services including video-on-demand.

ISP **103** also comprises a format-converting server **220** which facilitates the preparation of the desired information in the format specified by the user in the user profile. Format-converting server **220** may comprise text-to-audio and audio-to-text converters or some other comparable equipment.

Download server **222** is responsible for delivering customized information to the appropriate user device **110**. Download server **222** also acts as a storage device where information may be stored until a connection to user device **110** has been established. Download

server **222** is directly connected to output port **111** which is further connected to user device **110** via interconnection **120**.

In the network configuration of FIG. 2, most if not all of the intelligence may be resident on the network side of network connections **107** and **120**. As such, the sophistication required at the user end is minimal, thereby enabling the use of relatively simple and inexpensive user equipment.

FIG. 3 shows a flow diagram representing exemplary processing implemented at user computer **105** and at ISP **103**. The exemplary processing is accomplished in two phases. In the first phase, the user initiates access to ISP **103** via computer device **105**. When the user initiates access to ISP **103** (block **302**), access and control server **206** authenticates the user and login information for access to the network (block **304**). After initial access and authentication, the user creates a user profile (block **306**). The user profile includes requests for one or more sets of information as well as specified times, specified user devices, and, if appropriate, specified formats to deliver the information.

In the second phase, web portal server **208** of FIG. 2 prepares information requested in the user profile (block **308**). The information is gathered from one or more appropriate sources. The information is then forwarded to the download server **222** (block **314**). Generally, the information is available in the format desired by the user, but occasionally information needs to be converted to a different format before it can be delivered to the user. In these latter cases, the information is first processed by format-converting server **220** (block **310**). Format-converting server **220** changes the information to the specified format (block **312**) and then forwards it to download server **222** (block **314**).

Then, at the time specified by the user, if necessary, a connection is established between download server **222** and user device **110** (block **316**). This step is optional as a permanent link may exist between download server **222** and user device **110**. To establish this connection, ISP **103** places a call (i.e., a connection request) to user device **110**. User device **110** (e.g., a radio or a television set configured to communicate with the service provider) may be connected to ISP **103** via a DSL telephone line, a broadband wireless connection, a cable, an ethernet, or a power-line connection. Therefore, the call may be a telephone call or a direct IP/http request.

After the call is established, ISP **103** matches the user's IP address or other identifying code to the user profile stored by the ISP (block **318**). After authentication, information contents are downloaded to the specified user device (block **320**).

Generally, ISP **103** places a call to user device **110** to create a connection. However, if user device **110** is an intelligent device, the call may be placed by user device **110** to ISP **103**. In this case, user device **110** is programmed to contact ISP **103** at specified time to place a call.

The principles of the present invention are flexible. For example, the information contents may be downloaded in real-time or pre-fetched and queued on the download server to be downloaded at a specified time.

Generally, the first and second phases are not executed during a same ISP access session. A user may create his user profile days or even months in advance. However, it should be noted that the steps of the first and second phase may be executed in a sequence permitting the user to randomly access the network manually and request one or more sets of information.

The user has flexibility to change the selection of preferences and information requests in the user profile. In response, ISP 103 records and stores the updated user preferences for future use. For example, the user may select to change the specified time for the download of the information. The changes may be made in a variety of ways. For example, the user may access a calendar GUI (not shown) to select a year, month, and day corresponding to a new specified time. The user may select the specified time with even more precision (e.g., hours and minutes) by using a time-of-day field of the calendar.

The user may request changes in the selection of the user device, e.g., download information to a television, instead of a radio. The user also has flexibility in selecting a desired format of the information requested. Generally, the format is directly dependent on the particular user device 110. User device 110 can be any suitable type of equipment used for such a purpose including a computer terminal, a personal computer (PC), a portable laptop computer, a television set top box, a radio, or a personal data assistant (PDA). These examples include equipment that has a fixed location (e.g., a computer terminal, a PC, or a set top box) as well as mobile equipment whose location can vary over time (e.g., a laptop or a PDA). Analogously, the format can be audio, video, or text. Depending on the implementation, the user may have access to a pull-down menu where the user can just point and click at the specified format and select his choice.

Similarly, depending on the user device, interconnection 120 by which the information may be downloaded may be a permanent hard-wired link (e.g., computer network cabling or multi-media cable television service), a temporary hard-wired link (e.g., a phone line with a quick-connect jack to be plugged into a laptop or PDA with a modem), or a wireless connection.

The format may be chosen as an audio alarm or a video alarm. For example, a user may be particularly interested in news related to a particular stock. In those instances, as soon as the service provider receives any news related to that stock, it remotely generates an audio or video alarm.

5 Also, the principles of the invention include providing control capabilities to the user to control the delivery of the information. This is analogous to start/stop capabilities in a video recorder or in a video-on-demand service. Also, the information content may be (a) gathered before the specified time (pre-fetched and queued) or (b) gathered from its source database at the specified time and relayed to the user in real time. The user may have the capability to select
10 which information is to be received in real time and which information is to be relayed in a pre-recorded form.

In addition to the embodiments described above, the present invention may be applied to a variety of other network configurations. For example, although the invention has been described in the context of Internets, such as the world-wide web, the invention can also be implemented in
15 the context of other types of computer networks, including intranets. The present invention can also be implemented in the context of accessing a server that is not a part of a larger network.

It will be further understood that various changes in the details, materials, and arrangements of the parts which have been described and illustrated in order to explain the nature of this invention may be made by those skilled in the art without departing from the principle and
20 scope of the invention as expressed in the following claims.